

Patent Claims

1. A process for rotting compostable material in a quasi-stationary continuous process, with previous shredding and input of the shredded material into a mixing drum to undergo preliminary rotting under an elevated temperature and subsequent transport, for the purpose of rotting on ricks, characterized by the fact that during the passage through the process and behind predetermined process stages after the process stage "mixing drum," partial flows containing microbes are branched off from the flow of material, and, ahead of predetermined process stages that lie either toward the back of the process, ahead of, or at the beginning of the mixing drum, they are added once more to the flow of material there, which also contains microbes.
2. A process according to claim 1, characterized by the fact that behind the processing stage "mixing drum," a partial flow is branched off and conducted to the anterior end of the mixing drum.
3. A process according to claim 2, characterized by the fact that returning occurs within the mixing drum.
4. A process according to claim 2 or claim 3, characterized by the fact that the partial flow that is branched off behind the processing stage "mixing drum" is subjected, at least in part, to a subsequent anaerobic treatment (56) before this partial flow (55) is led back to the anterior end of the mixing drum (6) or to a processing stage before the mixing drum.
5. A process according to claim 4, characterized by the fact that, to provide a subsequent aerobic treatment, air, or a mixture of air and water, is led to the partial flow (55), during continuous thorough mixing in a reactor vessel in which the partial flow (55) and the air, or the mixture of air and water, respectively, are led in the form of a loop of flow that is enclosed within itself.
6. A process according to claim 5, characterized by the fact that the loop of flow (61) constitutes vertical downward flow (63) and vertical upward flow (64).
7. A process according to claim 6, characterized by the fact that the air and water mix is led to the vertical wastewater flow (63), and that the partial stream (70) that is to be led back to the mixing drum is taken from the vertical upward flow (64).

8. A process according to one of the claims 4 through 7, characterized by the fact that the partial flow (55), prior to subsequent aerobic treatment, is separated into a flow of solids (67) and a flow of cloudy water (68) such that preferably only the flow of cloudy water (68) is subjected to the subsequent aerobic treatment.

9. A process according to one of the claims 4 through 8, characterized by the fact that after the subsequent aerobic treatment, the partial flow (70) that is to be led back to the mixing drum is subjected to a period of sojourn in a sedimentation tank (65) such that the particles of solids that are present can settle as excess sludge (71).

10. A process according to one of the claims 1 through 9, characterized by the fact that a preliminary aerobic and/or anaerobic treatment takes place between the shredder and the mixing drum.

11. A process according to claim 10, characterized by the fact that a partial flow is branched off behind the rotating drum, and led back again before the processing stage of the aerobic and/or anaerobic pre-treatment.

12. A process according to claim 10 or 11, characterized by the fact that aerobic and/or anaerobic preliminary products are led to the aerobic and/or anaerobic pre-treatment, and that a continuous thorough mixture of the aerobic or anaerobic preliminary products occurs with the shredded material.

13. A process according to one of the claims 1 through 12, characterized by the fact that a thorough sifting occurs behind the mixing drum and that the material that is retained by the sieve is finely ground and led to the throughput process in front of the mixing drum.

14. A process according to claim 13, characterized by the fact that the finely ground material in front of the mixing drum experiences aerobic or anaerobic pre-treatment.

15. A process according to one of the claims 1 through 14, characterized by the fact that behind the mixing drum, heat is extracted from the material to be composted, and that the heat is led back to the process again ahead of the mixing drum.

16. A process according to one of the claims 1 through 15, characterized by the fact that water that has been prepared in a way that is friendly to microbes is conducted to the throughput process ahead of and/or in the mixing drum (8), and/or in the subsequent aerobic treatment (56).

17. A process according to claim 16, characterized by the fact that a water jet is conducted to an electromagnetic field in an atomized state, and that downstream, the atomized water jet is brought together again.

18. A process according to claim 17, characterized by the fact that the atomization occurs in a manner involving no mechanical contact, and only as a result of collision with another jet of water.

19. A process according to claim 18, characterized by the fact that the jets of water are aimed at the point of collision at an acute angle.

20. A process according to claim 17, characterized by the fact that the atomization occurs in a perforated impact plate (180), the holes of which pass through the impact plate 180 and end in the area of the electromagnetic field.

21. A process according to claim 16, characterized by the fact that admixture fluid, which also undergoes fermentation, is added to the water.

22. A process according to one of the claims 1 through 21, characterized by the fact that behind the mixing drum, preferably after prior sifting, an intermediate storage period of about three to thirty days occurs, substantially under hermetic seal.

23. A process according to one of the claims 1 through 22, characterized by the fact that the shredded material is led through a washing facility ahead of the mixing drum.

24. A process according to claim 23, characterized by the fact that the suspended particles are separated from the water in a topped water preparation apparatus, and they are either led to the process or disposed of separately.

25. A process according to claim 1 - 24, characterized by the fact that the branched off partial flows, with the exception of the partial flow that is led back from the posterior end to the anterior end of the mixing drum, are led once more to a pre-determined flow of material behind the "shredding" processing stage, but ahead of the "mixing drum" processing stage.

26. A process according to claim 1 - 25, characterized by the fact that a partial flow of shredded and thoroughly mixed material is led to the "mixing drum" processing stage after preliminary denitrification has occurred.

27. A process according to claim 1 - 26, characterized by the fact that the mixing drum is stationary and that the thorough mixing is accomplished by means of circulating conveyance.



29. A process according to claim 1 - 26, characterized by the fact that the mixing drum may be rotated around an axis with a horizontal component and that the thorough mixing is accomplished by means of mixing blades that sit rigidly on the mixing drum.

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